Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Promoting Investment in the 3550-3700 MHz Band;	)	GN Docket No. 17-258
	)	
Petitions for Rulemaking Regarding the Citizens Broadband Radio Service	)	

COMMENTS OF MOTOROLA SOLUTIONS, INC.

Motorola Solutions, Inc. ("Motorola Solutions" or "MSI") hereby submits these comments in response to the Notice of Proposed Rulemaking that seeks to modify the service rules and licensing requirements for the Citizens Broadband Radio Service ("CBRS") at 3550-3700 MHz ("3.5 GHz").[1] In these comments, Motorola Solutions continues to urge the Commission to ensure that any revised licensing framework for the CBRS preserves access opportunities for the deployment of localized, private broadband networks through the continued use of smaller-sized service areas for priority access licenses ("PALs").

I. Background

Motorola Solutions has been an active participant in the Commission's proceeding to establish the CBRS since its inception and has consistently provided strong support for enabling opportunistic sharing of the 3.5 GHz spectrum.[2] With its favorable propagation characteristics and ready availability throughout the world, the 3.5 GHz band is poised to spur significant

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1 *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, *Notice of Proposed Rulemaking*, 32 FCC Rcd 8071 (2017) ("Notice" or "NPRM").

2 *See e.g.*, Comments of Motorola Solutions, Inc., submitted Feb. 20, 2013; Comments of Motorola Solutions, Inc., submitted July 14, 2014; Petition for Reconsideration of Motorola Solutions, Inc., July 23, 2015. All pleadings were filed in GN Docket No. 12-354.

investment and development, and will ultimately become a major resource in support of next-generation networks and technologies.

MSI provides a wide variety of mission critical and business critical communications systems to customers worldwide and, in particular, to millions of professional and commercial radio customers in the U.S. We strongly support a regulatory framework based on the existing 3-tier sharing of the 3.5 GHz band to enable a wide variety of use cases, including private broadband systems for industrial, manufacturing, enterprise, utility, oil and gas users. As developed and promoted by the Commission, the 3.5 GHz shared access model based on census track service areas for PAL licenses provides realistic opportunities for organizations other than large commercial wireless carriers to utilize the CBRS spectrum for private and secure broadband networks designed to meet communications needs over campus-sized environments. Indeed, one of the benefits of the CBRS rules is that "[m]anufacturers, utilities, and other large industries can construct private wireless broadband networks to automate processes that require some measure of interference protection and yet are not appropriately outsourced to a commercial cellular network."[3] The demand for such private networks remains strong as industrial and manufacturing enterprises incorporate new IoT applications within the work environment.

[3] *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, *Report and Order and Second Further Notice of Proposed Rulemaking*, 30 FCC Rcd 3959 (2015) at ¶ 6 ("3.5 GHz Report and Order").

MSI reiterated these same beliefs in comments filed earlier this year in response to the commercial wireless industry's requests to alter the CBRS licensing rules that were finalized only a few months earlier in 2016.[4] At that time, Motorola Solutions affirmed its preference to proceed under the 2016 rules but acknowledged that the CBRS spectrum hierarchy is a complex arrangement and, therefore, MSI did not oppose consideration of limited "tweaks" to the spectrum access rules.[5] MSI opposed, however, proposals that would eliminate the opportunity for interference-protected, private and secure broadband applications in the CBRS and therefore urged the Commission to reject proposals that would increase the size of the PAL service areas from census tracts to Partial Economic Areas ("PEAs") or extend the PAL license term from 3 to 10 years, with unlimited renewability. As alternatives to those disruptive proposals, Motorola Solutions recommended that the Commission consider providing "at least several thousand priority access license areas nationwide" rather than only 416 PEAs and extending the PAL licensed term from 3 to 5 years with opportunity for one renewal.[6]

These and other issues are again raised in the subject Notice of Proposed Rule Making. The NPRM requests further comment on the geographic license size of PALs, asking whether PEAs strike an "appropriate balance between facilitating access to spectrum by both large and small providers while incentivizing investment in, and rapid deployment of, new technologies."[7] The NPRM also proposes to increase the PAL license term from three years to ten years while eliminating the requirement that PAL licenses automatically terminate at the end of the license

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4 Comments of Motorola Solutions, Inc., in Response to Petitions for Rulemaking, GN Docket No. 12-354, submitted July 24, 2017 ("MSI PFR Comments").

5 *Id.* at 2.

6 *Id.* at 3–5.

7 NPRM at ¶ 24.

term.[8] Below, Motorola Solutions provides its further responses to these and other issues raised in the NPRM.

II. PAL Geographic Service Area

Motorola Solutions continues to believe that using the 74,000+ census tracts for PAL geographic service areas maximizes deployment opportunities for users of smaller, high quality of service ("QoS") private networks in interference protected spectrum. Motorola Solutions believes that the Commission was correct when it observed earlier in this proceeding that "[c]ensus tract-level licensing also aligns well with small cell deployment. Due to their low power and small size, small cells can provide broadband coverage and capacity in targeted geographic areas. This applies whether small cells are used to offer independent broadband service, supplemental coverage for a macrocell network, or private network functions."[9]

Commercial wireless providers have business models driven by offering wide-area coverage and thus have different motivations for the equitable distribution of licenses than those interested in more limited and defined coverage. While MSI appreciates that wireless carriers would want to maximize the geographic area covered by PAL licenses in order to minimize risks to continued access to this spectrum, extending the size of the service areas to PEAs would limit access to interference protected spectrum to all but the largest service providers due to the high licensing costs associated with larger license areas. While many potential users in the industrial, utility, oil and gas and enterprise segments desire interference protection for business-critical operations, they will be increasingly unlikely to participate in auctions for licenses that far exceed their coverage needs as they lack the skill, experience and motivation to manage the

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8 *Id.* at ¶ 13.

9 3.5 GHz Report and Order at ¶ 98.

subleasing of the excess service area. Extending the size of the geographic area for PAL licenses will therefore reduce the number of auction participants and negatively impact the diversity of innovative broadband solutions for the CBRS that the Commission intended to promote. Such an outcome would be unfortunate given that the band is destined to be used primarily for small cell deployments that align most efficiently with smaller licensing areas.

In defining the basic geographic service area for PAL licensing, the Commission must balance competing interests. However, it is clear that as the size of the area is increased, the number of interested auction participants will decrease. This is true whether the Commission replaces census tracts with PEAs or counties, as promoted by NCTA and its members.[10] While reliance on county-sized service areas would be preferable over PEAs, any change from census tracts would result in discouraging at least some segment of users interested in deploying non-traditional, private broadband networks from participating in the PAL licensing process.

In short, access to smaller-sized licensing areas is essential for promoting a diversity of broadband uses in the 3.5 GHz band. Thus, should the Commission choose to increase the geographic service areas for PALs, Motorola Solutions recommends a hybrid approach, where four 10 MHz county-sized licenses and three 10 MHz census tract-sized licenses are made available to interested parties via auction. This hybrid approach would better meet the needs of both larger service providers and cable operators than would the existing rules, but would also maintain opportunities for smaller entities that require interference-protected operations in the band. Should demand for small-scale, private broadband networks not develop in a particular

[10] *See, e.g.,* Comments of NCTA – The Internet & Television Association Comments on Petitions For Rulemaking, GN Docket No. 12-354, July 24, 2017, at 8

area, commercial carriers can assemble adjacent census tracts into county-wide or greater service areas.

The Commission should remove the "N-1 rule" and make available as many PAL licenses as there are interested bidders in a particular geographic region, as this will help to ensure an adequate supply of interference protected spectrum for a variety of use cases. In those locations where there is only one applicant for a PAL, MSI favors simple assignment of that license to the applicant, similar to the existing rules. If desired, this policy may be restricted to census tract sized licenses. Otherwise, Motorola Solutions believes that it is important to keep other license conditions (*e.g.*, license term, technical standards) the same between county and census tract level licenses to enable users to aggregate area in adjacent regions and operate under the same rules. PAL applicants should also be permitted to bid on a particular channel in order to more accurately assign a value to a particular spectrum block by fully accounting for the presence of incumbent users in the region. Finally, Motorola Solutions urges the Commission to maintain the spectrum aggregation limit of 40 MHz in order to promote a diversity of spectrum users in all parts of the country.

III. License Term

As discussed in our comments to the petitions for rulemaking, MSI continues to believe that 5-year license terms with a single renewable 5 year term should be allowed. We believe that modest (10 year) license terms strike the right balance between investment recovery and innovative uses in the band. Motorola Solutions does not support indefinite expectation of renewal of licenses, particularly over wide geographic areas, as this will create too many opportunities for underutilization of interference protected spectrum in too many areas of the country.

The NPRM raises the possibility of reauctioning all PAL licenses after 10 years but providing bidding credits for the existing licensee to help mitigate the risk of stranded investment.[11] Such a proposal may be workable provided that the bidding credit is proportional to the licensee's actual use of the spectrum and/or it willingness and effort to make its idle PAL spectrum available to others via secondary markets.

To that end, MSI supports disaggregation and partitioning of PAL licenses regardless of license characteristics, as these concepts, if implemented, promise to improve spectrum utilization in the band. In general, however, MSI continues to believe that there is a general lack of incentive for leasing spectrum on secondary markets, particularly for larger PAL holding entities and, therefore, would support further measures and policies to encourage placing PAL spectrum on secondary markets.

IV. Emissions Limits

The NPRM proposes to modify the existing emissions limits and seeks comment on a recommendation submitted by Qualcomm's to extend the existing -13 dBm/MHz limit from 0 to 100% of the channel bandwidth.[12] Alternatively, the NPRM seeks comment on a more graduated reduction of the emissions limits in Qualcomm's proposal. Motorola Solutions continues to believe that relaxation of the existing mask is not warranted, however, we recognize that several parties have requested mask changes as a way to alleviate A-MPR (Additional Maximum Power Reduction) concerns in a cost-effective manner. As such, should the Commission choose to relax the transmit spectral mask, Motorola Solutions prefers the option to extend the first -13 dBm/MHz mask shelf out by the total bandwidth (B) of the channel. This

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11 NPRM at ¶ 19.

12 NPRM at ¶ 54.

change should be coupled with a total utilized spectrum aggregation limit in the band of 40 MHz (*i.e.,* the current PAL limit) to promote diverse access of the band in all locations.

V. Conclusion

Motorola Solutions believes that the CBRS will be a tremendous spectrum asset for near-term deployment of small-cell technologies, including private broadband networks. Deployment scenarios are still being developed and the Commission must be careful to not prematurely favor certain business models to the preclusion of others. This is best achieved by preserving opportunities for spectrum access to the broadest number of participants, particularly at the initial stages of licensing of this new service. For this reason, Motorola Solutions supports rules and policies that encourage a diversity of uses by establishing smaller sized service areas and limited license terms.

Respectfully submitted,

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